



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,031	11/14/2003	Walter Hubis	03-1651	2851
24319	7590	07/24/2007		
LSI CORPORATION 1621 BARBER LANE MS: D-106 MILPITAS, CA 95035			EXAMINER BENGZON, GREG C	
			ART UNIT	PAPER NUMBER
			2144	
			MAIL DATE	DELIVERY MODE
			07/24/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/714,031

Applicant(s)

HUBIS, WALTER

Examiner

Greg Bengzon

Art Unit

2144

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This application has been examined. Claims 1- 22 are pending.

#### ***Priority***

The effective date of the claims described in this application is November 14, 2003.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 8-9, 11-12, 15,16,18, 19 rejected under 35 U.S.C. 102(e) as being anticipated by Mullendore et al. (US Publication 2003/0185154).

Mullendore disclosed (re. Claim 1) a storage network appliance comprising: a TCP/IP router for routing block level storage requests through a TCP/IP network communication medium; (Mullendore-Paragraph 72, Figure 7) and a cache memory for caching storage data blocks accessed by the block level storage requests. (Mullendore-Paragraph 72, Figure 7)

Mullendore disclosed (re. Claim 2) a command and response processor coupled to the router for interpreting block level storage requests (Mullendore-Paragraph 70 ) routed through the router and coupled to the cache memory for caching data identified in the interpreted block level storage requests.

Mullendore disclosed (re. Claim 3) wherein the block level storage requests are iSCSI protocol commands and responses. (Mullendore-Paragraph 13)

Mullendore disclosed (re. Claim 4) wherein the command and response processor is a SCSI command and response processor. (Mullendore-Paragraph 13)

Mullendore disclosed (re. Claim 5) wherein the command and response processor is adapted to snoop the block level storage requests routed by the router.

(Mullendore-Paragraph 45)

Mullendore disclosed (re. Claim 6) wherein the router is adapted to store and forward received requests. (Mullendore-Paragraph 72, Figure 7)

Mullendore disclosed (re. Claim 8) wherein the command and response processor is adapted to retrieve information from the cache memory in response to identifying a request to access data previously stored in the cache memory.

(Mullendore-Paragraph 72, Figure 7)

Mullendore disclosed (re. Claim 9) wherein the router is adapted to conditionally forward a received command in response to operation of the command and response processor retrieving the information from the cache memory. (Mullendore-Paragraph 72, Figure 7)

Mullendore disclosed (re. Claim 11) a method operable in a network router comprising the steps of: receiving a block level storage request from a network communication medium; and processing the received block level storage request in association with a cache memory local to the router. (Mullendore-Paragraph 72, Figure 7)

Mullendore disclosed (re. Claim 12) conditionally forwarding the received request to an intended destination device on a network communication medium in response to the processing in association with the cache memory. (Mullendore-Paragraph 72, Figure 7)

Mullendore disclosed (re. Claim 15) an iSCSI router comprising: in inbound network interface for receiving iSCSI storage requests and for returning responses to received iSCSI storage requests; (Mullendore-Paragraph 72, Figure 7)

an outbound network interface for forwarding received iSCSI requests to a destination device and for receiving responses from the destination device; (Mullendore-Paragraph 72, Figure 7)

a cache memory; (Mullendore-Paragraph 72, Figure 7) and

a control element coupled to the inbound network interface, coupled to the outbound network interface, (Mullendore-Paragraph 72, Figure 7) and coupled to the cache memory and adapted to process iSCSI requests received on the inbound network interface in association with the cache memory and adapted to selectively forward processed iSCSI requests to a destination device via the outbound network interface. (Mullendore-Paragraph 72, Figure 7)

Mullendore disclosed (re. Claim 16) wherein the control element further comprises: a cache management element for storing write data supplied in a received request into the cache memory and for locating read data requested in a received request in the cache memory. (Mullendore-Paragraph 72, Figure 7)

Mullendore disclosed (re. Claim 18) an improved network router compatible with TCP/IP protocols and adapted for coupling to one or more host systems and one or more iSCSI compatible storage devices, the improvement comprising: a SCSI command and response processor (Mullendore-Paragraph 13) within the router to process iSCSI commands and responses forwarded through the router; and a cache memory within the router (Mullendore-Paragraph 72, Figure 7) coupled to the SCSI command processor for caching data related to iSCSI commands and responses processed by the SCSI command and response processor.

Mullendore disclosed (re. Claim 19) wherein the SCSI command and response processor is adapted to conditionally forward received iSCSI commands to a storage device based on processing of the iSCSI command in association with the cache memory. (Mullendore-Paragraph 72, Figure 7)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7,10,13,17,21,22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mullendore et al. (US Publication 2003/0185154) further in view of Liu, Wei et al. (US Publication 2004/0117441).

While Mullendore substantially disclosed the claimed invention Mullendore did not disclose (re. Claim 7) wherein the command and response processor is adapted to process received requests while the requests are temporarily stored for forwarding.

Mullendore did not (re. Claim 10) wherein the command and response processor is adapted to coalesce multiple block level storage write requests into a coalesced block level storage write request and wherein the router is adapted to forward the coalesced

Art Unit: 2144

block level write request to a destination device in place of the multiple block level storage write requests.

Liu disclose (re. Claim 7) wherein the command and response processor is adapted to process received requests while the requests are temporarily stored for forwarding. (Liu-Paragraph 9, Paragraph 118)

Liu disclosed (re. Claim 10) wherein the command and response processor is adapted to coalesce multiple block level storage write requests into a coalesced block level storage write request and wherein the router is adapted to forward the coalesced block level write request to a destination device in place of the multiple block level storage write requests. (Liu-Paragraph 9, Paragraph 118)

Mullendore and Liu are analogous art because they present concepts and practices regarding routing of iSCSI write requests using a router cache. At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Liu into Mullendore. The motivation for said combination would have been (Liu-Paragraph 4) to improves the data transmit characteristics between local and remote storage.

Mullendore-Liu disclosed (re. Claim 13, 17) coalescing multiple received block level storage requests into a coalesced block level storage request; and forwarding the coalesced block level storage request to a destination device. (Liu-Paragraph 9, Paragraph 118)

Art Unit: 2144

Mullendore-Liu disclosed (re. Claim 21) wherein the SCSI command and response processor is adapted to process iSCSI write requests by storing the associated write data in the cache memory. (Liu-Paragraph 9, Paragraph 118)

Mullendore-Liu disclosed (re. Claim 22) wherein the SCSI command and response processor is further adapted to coalesce data stored in the cache memory into a larger coalesced write request and is further adapted to route the coalesced write request to the storage device. (Liu-Paragraph 9, Paragraph 118)

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14,20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mullendore et al. (US Publication 2003/0185154) further in view of what was well-known in the art.

Mullendore disclosed (re. Claim 14,20) locating data requested by a received block level storage request in the cache memory; and returning the located data to a

Art Unit: 2144

requesting device in response to locating the requested data. (Mullendore-Paragraph 72, Figure 7)

However Mullendore did not disclose (re. Claim 14,20) wherein the step of conditionally forwarding is operable to preclude forwarding of the received request in response to locating the requested data, and wherein the step of conditionally forwarding is operable to forward the received request in response to failure to locate the requested data.

At the time of the invention it would have been well-known in the networking art that if a request for data is satisfied by a cache then there would be no need to forward said request for data. At time of the invention it would have been obvious to person of ordinary skill in the networking art to combine what was well-known in the art into Mullendore. The motivation for said combination would have been to improve data retrieval processing using cache storage.

### ***Conclusion***

**Examiner's Note:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures

Art Unit: 2144

may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please refer to the enclosed PTO-892 form.

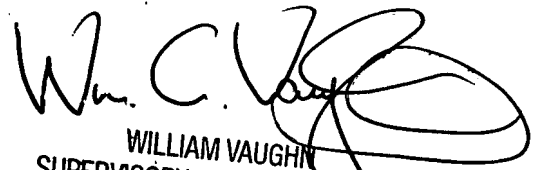
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Greg Bengzon whose telephone number is (571) 272-3944. The examiner can normally be reached on Mon. thru Fri. 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Vaughn can be reached on (571)272-3922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2144

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

gcb



WILLIAM VAUGHN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100

